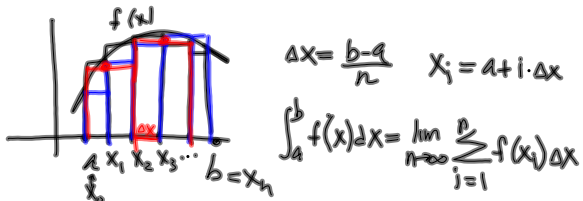


Review 13 Riemann Sums



$$RRAM = (y_1 + y_2 + \dots + y_n) \Delta x \quad \text{leave off first one}$$

$$L RAM = (y_0 + y_1 + \dots + y_{n-1}) \Delta x \quad \text{leave off last one}$$

$$M RAM = (y_1 + y_3 + y_5 + \dots + y_{n-1}) 2\Delta x \quad \text{use every other one \& twice as wide}$$

Trapezoidal Rule

$$T = \frac{h}{2} [y_0 + 2y_1 + 2y_2 + \dots + y_n]$$

$$h = \Delta x = \frac{b-a}{n}$$

$$T = \frac{L RAM + R RAM}{2}$$

all traps must have same width $\Delta x, h$

if not uniform width then: one trap at a time

$$\frac{h}{2} (y_0 + y_n)$$

Mar 8-9:50 AM

Mar 8-10:02 AM

Ex 1

time	0	1	2	3	4	5	6	7	8	9	10
velocity	0	6	10	16	14	12	18	22	12	4	2

estimate distance

a) $L RAM [0 + 6 + 10 + 16 + \dots + 4] \cdot 1 = 114$

b) $R RAM [6 + 10 + 16 + 14 + \dots + 2] \cdot 1 = 116$

c) $M RAM [6 + 16 + 12 + 22 + 4] \cdot 2 = 120$

d) Trap $\frac{114 + 116}{2} = 115$

Ex 2.

time (hr)	0	1	2	3	4	5
Temp ($^{\circ}F$)	76	78	81	82	80	79

use Trap to estimate the average temp

$$\frac{1}{5-0} \cdot \frac{1}{2} [76 + 2(78 + 81 + 82) + 80 + 79] = 398.5$$

$$\bar{y} = \frac{1}{b-a} \int_a^b f(x) dx = \frac{398.5}{5} = 79.7^{\circ}F$$

Mar 8-10:07 AM

Mar 8-10:17 AM